

**NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST  
SAN DIEGO, CALIFORNIA 92132-5140**

**CONTRACT N62473-07-D-4013  
LOW LEVEL RADIOLOGICAL WASTE (Ra-226) GENERATION EVALUATION  
VARIOUS BRAC ACTIVITIES**

**SECTION 1 – GENERAL**

**1.1 INTRODUCTION**

This Scope of Work (SOW) provides for an evaluation of practices at BRAC cleanup sites with regard to generation and disposal of soil/debris containing radium-226 and classified as low level radiological waste (LLRW), soil/ debris containing both radium-226 and strontium-90 and classified as LLRW. This SOW will be managed by Naval Facilities Engineering Command, Engineering Service Center, Port Hueneme, California with input from BRAC Program Management Office West and the Navy's Radiological Affairs Service Office (RASO).

**1.2 BACKGROUND**

The Navy is performing cleanup actions at a variety of BRAC bases that result in the generation and disposal of LLRW. This SOW addresses LLRW related to the former use of radium-226 in radioluminescent devices. Dials, gauges, markers and signage are examples of such devices. Many of these devices used radium-226 as a component in radioluminescent paint. Radium paint shops were historically operated at Navy shipyards and air stations to repair and refurbish these devices. Based on the results of BRAC base cleanups, radium-226 is the primary radiological contaminant. Radium-226 is a gamma emitter and can be detected in the field using a sodium iodide detector (NaI detector). The Navy also collects samples for analysis at a fixed-base laboratory. The accepted cleanup level for radium-226 is 1 picoCurie per gram plus background. Background estimations are site specific. Soil or debris that exceeds the cleanup goal for radium-226 is considered LLRW.

In addition to radium-226, other radiological sources may have been used at BRAC bases, and these are discussed in Historical Radiological Assessments prepared for each BRAC base. Although other radionuclides may be present at BRAC bases, this SOW considers only radium-226.

**1.3 OBJECTIVES**

This objectives of this SOW are to:

- Evaluate current practices at BRAC bases for identifying LLRW for disposal (Hunters Point Shipyard, Treasure Island, and Alameda Point);
- Provide recommendations to refine existing practices for identifying LLRW that are sufficiently conservative to ensure LLRW is identified and properly disposed, but not so conservative that excessive non-LLRW is disposed of as LLRW;
- Perform a cost analysis by documenting the historical costs for characterization and disposal of LLRW, and estimate potential savings based on recommendations provided in this evaluation;
- Document the requirements for disposal of non-LLRW investigation derived waste generated from a radiologically-impacted site;
- Prepare a report that documents the evaluation and summarizes conclusions and recommendations.

The period of performance for this contract will be for 9 months.

**SECTION 2 – WORK ELEMENTS**

**2.1 Work Element 1 – Project Management**

The contractor shall provide personnel and resources for the management and control of project activities, such as scoping, planning, estimating, executing, tracking, reporting, and closure of the project. This element

includes direct management of the project, as well as the support for administrative functions needed for successful project management. This element also includes meetings with Navy personnel to discuss interim project results during the project's execution.

## **2.2 Work Element 2 – Data Review**

The contractor shall provide the following:

- Collection and compilation of laboratory and field screening data from Hunters Point Shipyard, Treasure Island, and Alameda Point;
- Review of background calculation methodologies;
- Compilation and review of current field practices used to identify and segregate LLRW from non-LLRW;
- Evaluation of the threshold levels being used for field instruments (NaI detector) to segregate LLRW from non-LLRW, including the methods used to estimate background;
- Reviewing field data and the corresponding laboratory analytical data used for identification and disposal of LLRW.

The cleanup goal for radium-226 as well as the screening level utilized in the field depend on the calculation of background activity. The generally accepted cleanup goal is 1 picoCurie per gram (pCi/g) above background. Screening levels utilized in the field are more variable, but the most common screening level is background plus 3 standard deviations, which is measured in counts per minute (cpm). Background measurements are collected in a nearby, non-impacted area. Although this SOW does not focus on the method that background activity is calculated, the contractor shall address its method of calculation and how variations in background affect the classification of LLRW.

Current field practices should be documented and understood. These field practices should be used as a baseline for comparison with other potential practices that would reduce the disposal of non-LLRW at LLRW facilities while ensuring the segregation and disposal of LLRW. Factors to consider include the threshold level used to identify a radiological hot spot(s), and once identified, how much soil is segregated as LLRW.

Soil and other debris may be identified in the field for disposal as LLRW using field screening devices known as scintillation detectors or sodium iodide detectors. Screening results above mean background plus 3 standard deviations (referred to as background plus 3 sigma), result in the segregation of material for disposal as LLRW. This field screening level ensures that LLRW (material that exceeds the cleanup goal of background plus 1 pCi/g) is identified and properly disposed, and not mistakenly classified as non-LLRW. The screening level is meant to provide assurance that the cleanup goal is not exceeded, and material that should be classified as LLRW is classified correctly. The contractor should review historical data to evaluate whether or not a less conservative screening level could be used that provides assurance that LLRW is classified correctly, while reducing the volume of non-LLRW that is classified as LLRW. If a different screening level is recommended, the contractor shall address the potential for regulatory agency acceptance given their participation in the planning process and concurrence on past planning documents.

## **2.3 Work Element 3 – Cost Analysis**

The contractor shall prepare a cost analysis to document current LLRW classification and disposal costs and potential savings based on the implementation of refined LLRW segregation practices and/or use of refined screening levels.

## **2.4 Work Element 4 – Reporting**

The contractor shall prepare a draft and final report documenting the analyses completed and summarizing the findings and recommendations. A draft report will be issued for Navy review. Review comments will be provided within 21 days. The contractor will then incorporate review comments and issue a final report.

### SECTION 3 – PERFORMANCE REQUIREMENTS

Performance Objective	Performance Standard	Acceptable Quality Level	Assessment Method	Incentive	Remedy
Develop					
Draft Report (technical content)	Document includes technical alternatives or procedures containing the following qualities: <ul style="list-style-type: none"> <li>● reduced cleanup cost</li> <li>● reduced cleanup time</li> <li>● acceptable cleanup goals by stakeholders</li> <li>● improved strategy</li> </ul>	Conclusions and recommendations described completely and supported with sound technical reasoning. Recommendations are for an improved approach to LLRW characterization as measured in cost avoidance or other tangible or intangible benefits. Improved strategy is technically achievable without additional cost.	COR and Navy PM will review the data	Meeting or exceeding AQL will result in a 10% award fee rating.	Not meeting AQL during a preliminary review will require specific rework to meet government goals and objectives. Conduct review meeting to determine concurrence of Navy goals and objectives.
Draft Report (presentation quality)	Document is organized, well written and can be comprehended by the general community. Document reviewed by an editor and includes persuasive discussions. Document includes <ul style="list-style-type: none"> <li>● background summary</li> <li>● data analysis</li> <li>● conclusions</li> <li>● recommendations</li> </ul>	Factually accurate and complete with no more than 2 major deficiencies (e.g. missing information) and 5 minor deficiencies (e.g. spelling, format, wrong date).	COR and Navy PM will review the data	Exceed AQL will allow Contractor to skip Draft Final report and produce Final Report	Not meeting AQL will require Contractor to produce a Draft Final report and submitting for Government review before proceeding to Final Report.

### SECTION 4 - DELIVERABLES

- Approach for data review and evaluation
- List of questions and/or additional data needed from the Navy BRAC Coordinator
- Meeting minutes
- Draft, Draft Final, and Final Report

### SECTION 5 – SPECIAL CONDITIONS:

- 5.1 All requirements of the Contract in addition to those specifically mentioned in this delivery order remain in full effect and performance under this delivery shall be in accordance therewith.
- 5.2 Minutes of team meetings shall be submitted to the Navy project manager within **10** calendar days after each meeting.
- 5.3 The contractor shall ensure that any potentially sensitive data is dealt with in accordance of Navy policy. This should include provisions for handling trade secrets and classified information if applicable.

- 5.4 The contractor will obtain approval from the Contracting Officer before obtaining photography records, still or motion picture and/or aerial or ground photographs, in accordance with Public Law: 18 U.S. Code 795 and applicable State Regulations. The government may provide a representative to act in an advisory capacity to prevent unauthorized disclosure of classified information.
- 5.5 The contractor shall not disclose any data resulting from actions in this Contract to the news media or public. The contractor shall refer all press or public contacts to the CSO and shall notify the RPM of their actions. The contractor may not distribute reports or data to any other source, unless specifically authorized by the Public Affairs Officer in accordance with NAVFAC Instruction 5720.1A.

## **SECTION 6 – CONTRACT ADMINISTRATION DATA**

### **6.1 General Information**

Location: Various BRAC Bases  
California  
Type of funds: BRAC

### **6.2 Points of Contact:**

#### **Project Manager**

Name: Amy Hawkins  
Mailing Address: Naval Facilities Engineering Command  
Engineering Service Center, EV 411  
1100 23rd Avenue  
Port Hueneme, CA 93043  
Phone: (805) 982-4890  
FAX: (805) 982-4304

#### **BRAC Coordinator**

Name: George Patrick Brooks  
Mailing Address: BRAC Project Management Office  
1455 Frazee Road, Suite 900  
San Diego, CA 92108  
Phone: (619) 532-0953  
FAX: (619) 532-0940

#### **RASO Coordinator**

Name: Laurie L. Lowman  
Mailing Address: NAVSEADDET RASO  
P.O. Drawer 260, Building 1971  
NWS Yorktown, VA 23691-0260  
Phone: (757) 887-7650  
FAX: (757) 887-3235

#### **Contract Specialists (CS)**

Name: Mark Muralt  
Mailing Address: BRAC Project Management Office  
1455 Frazee Road, BPMOW.MM  
San Diego, CA 92108  
Phone: (619) 532-0779  
FAX: (619) 532-0940

Name: Elizabeth Corder, SCAN  
Phone: (805) 982-4012  
Email: [Elizabeth.corder@navy.mil](mailto:Elizabeth.corder@navy.mil)

Name: Palmer Anderson, NAVFAC ESC  
Phone: (805) 982-1488  
Email: [Palmer.Anderson@navy.mil](mailto:Palmer.Anderson@navy.mil)

Name: Leah Alejo, NAVFAC ESC  
Phone: (805) 982-1753  
Email: [leah.alejo@navy.mil](mailto:leah.alejo@navy.mil)

## **SECTION 7 –PERIOD OF PERFORMANCE**

- 7.1 The work shall begin upon contract award and shall be completed within 9 months. An additional month will be allowed for project closeout.

## **SECTION 8 – REFERENCES**

- 8.1 Basewide Radiological Removal Action Memorandum, Hunters Point Shipyard, San Francisco, California, Revision 2006.
- 8.2 Base-Wide Radiological Work Plan Revision 1, Hunters Point Shipyard, San Francisco, California, October, 2007.
- 8.3 Final Project Work Plan, Revision 2, Base-wide Storm Drain and Sanitary Sewer Removal, Hunters Point Shipyard, San Francisco, California, June 2008.
- 8.4 Final Project Work Plan, IR Sites 5 and 10 (Buildings 5 and 400) Storm Drain and Sewer Drain Lines TCRA, Alameda Point, Alameda, California, June 13, 2008.
- 8.5 Final Time-Critical Removal Action Work Plan, Installation Restoration Sites 1, 2, and 32, Former Naval Air Station Alameda, Alameda Point, Alameda, California, March 2, 2007.
- 8.6 Final Removal Action Work Plan/Remedial Design, Non-time Critical Removal Action, IR Site 12, Treasure Island, San Francisco, California, February 26, 2007